

# Technical Data for Alicat **MB-Series** Mass Flow Meters

50 SLPM full scale through 5000 SLPM of full scale

Standard Specifications (Consult Alicat for available options.)



Tel: 888-290-6060

[www.alicat.com/mb](http://www.alicat.com/mb)

SENSOR PERFORMANCE	
Mass Flow Accuracy at calibration conditions <sup>1</sup>	±0.8% of reading and ±0.2% of full scale
High Accuracy Option <sup>1</sup>	±0.4% of reading and ±0.2% of full scale Available for ≤500 SLPM models
Bidirectional option <sup>1</sup>	±0.2% of full scale in addition to base accuracy (above)
Repeatability (2σ)	±(0.2% of reading + 0.02% of full scale)
Flow Measurement Range	0.01–100% of full scale
Temperature Sensitivity	Mass flow zero shift and span shift: 0.02% of full scale per °C from 25°C
Pressure Sensitivity	Mass flow zero shift and span shift: ±(0.08% of reading + 0.02% of full scale) per atmosphere from calibration conditions
Operating Temperature Range	-10–60°C (expanded range available)
Temperature Accuracy	±0.75°C
Operating Pressure full scale	160 PSIA (additional options available)
Pressure Accuracy above 1 atm	±0.5% of reading
Pressure Accuracy below 1 atm	±0.07 PSIA
Totalizer Volume Uncertainty	±0.5% of reading additional uncertainty
Sensor Response Time	<1 ms
Typical Indication Response Time <sup>2</sup>	65–255 ms (flow rate dependent)
Typical Warm-Up Time	<1 s

<sup>1</sup> Stated accuracy is after tare under equilibrium conditions.

Extreme gas behavior (especially near state boundaries) can introduce additional flow uncertainties.

<sup>2</sup> Indication response time includes user adjustable averaging up to 255 ms.

MECHANICAL	
Minimum Operating Pressure	11.5 PSIA common mode pressure (lower operating pressures available) Differential pressure must exceed model pressure drop, see below for details
Maximum Operating Pressure	Damage possible above 175 PSIA common mode pressure Damage possible above 75 PSID differential pressure
Ingress Protection	IP40 (consult Alicat for weatherproofing options)
Humidity Range	0–95%, non-condensing
Wetted Materials	303 / 304 stainless steel, Viton®, heat-cured silicone rubber, glass-reinforced polyamide, heat-cured epoxy, aluminum, gold, silicon, glass

COMMUNICATIONS	
Digital I/O Options	Serial over Micro-USB B
Digital Data Update Rate	40 Hz at 19200 baud
Display Update Rate	10 Hz
Battery Life (contrast dependent)	Monochrome screen: 18 hours, 14 hours backlit Color TFT: 8 hours

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FEATURES	
STP Reference Conditions	25°C and 1 atm (default), user configurable
NTP Reference Conditions	0°C and 1 atm (default), user configurable
Monochrome LCD or Color TFT Display with integrated touchpad	Simultaneously displays mass flow, volumetric flow, pressure and temperature
Gas Select™	98 user selectable gases stored internally. Each gas optimized to match NIST's REFPROP 10 gas property calculations across the operating temperature and pressure ranges for highest accuracy.
COMPOSER™	20 user definable gas mixes. Each mix may have up to 5 gases with 0.01% precision.

RANGE-SPECIFIC TECHNICAL DATA			
Full scale flow	Pressure drop at full scale flow <sup>3</sup>	Process connections <sup>4</sup>	Mount tap size
50 SLPM	2.0 PSID	¼" NPT female	4× 8-32 UNC 0.375 in [9.53 mm]
100 SLPM	2.5 PSID	¼" NPT female	4× 8-32 UNC 0.375 in [9.53 mm]
250 SLPM	2.1 PSID	½" NPT female	4× 8-32 UNC 0.375 in [9.53 mm]
500 SLPM	4.0 PSID	¾" NPT female	4× 8-32 UNC 0.375 in [9.53 mm]
1000 SLPM	6.0 PSID	¾" NPT female	4× 8-32 UNC 0.375 in [9.53 mm]
2000 SLPM	5.0 PSID	¾" NPT female (1¼" NPT connection available)	4× 8-32 UNC 0.330 in [8.38 mm]
3000 SLPM	7.1 PSID	1¼" NPT female	4× 8-32 UNC 0.330 in [8.38 mm]
5000 SLPM	3.4 PSID	2" NPT female	4× 8-32 UNC 0.300 in [7.62 mm]

<sup>3</sup> Default valve venting air to atmosphere. Lower pressure drops available, please see our WHISPER-Series mass flow meters at [www.alicat.com/mwb](http://www.alicat.com/mwb).

<sup>4</sup> Consult Alicat for available process connection options, such as: compression, face seal, push-to-connect, BSPP, SAE, or Swagelok (including tube, VCO, and VCR).

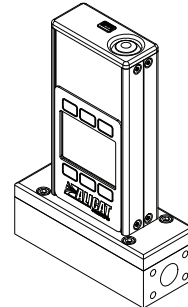
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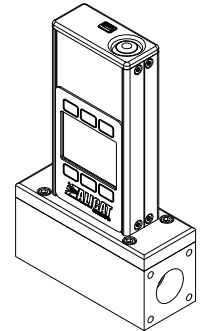


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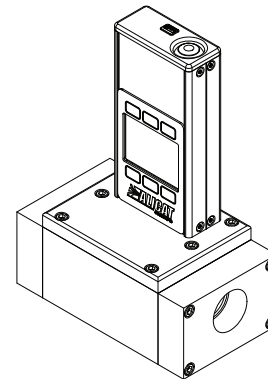
## Representative Examples



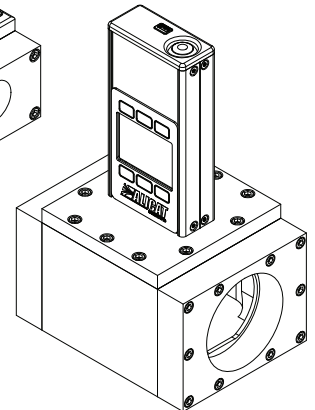
50 slpm



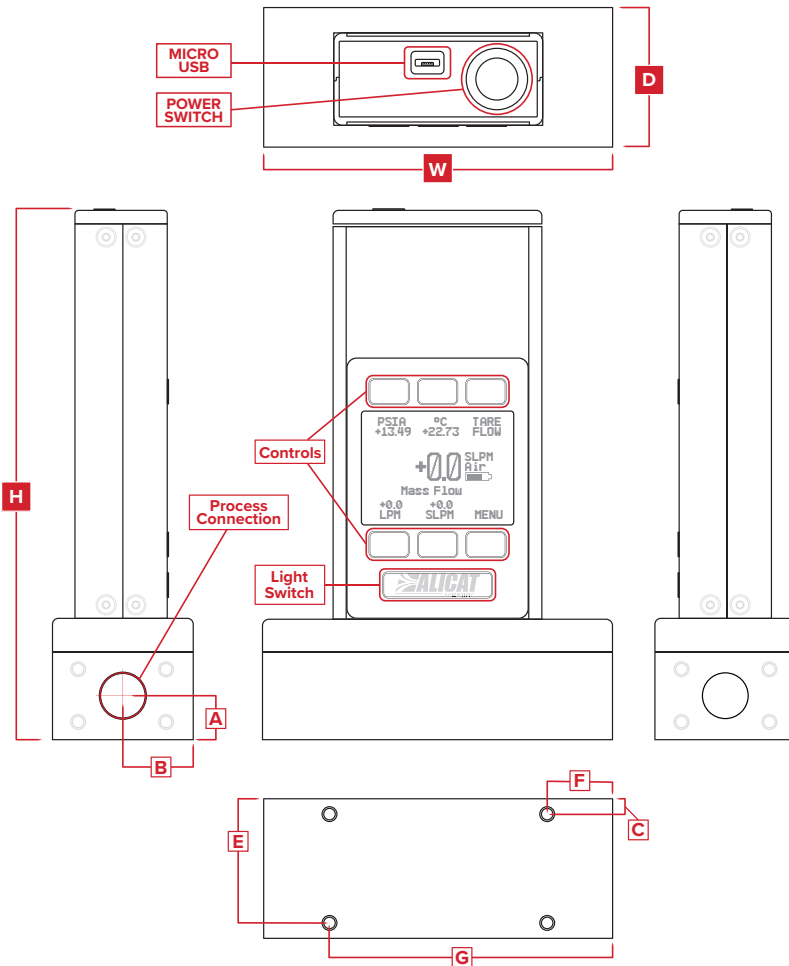
250 slpm



2000 slpm



5000 slpm



## DIMENSIONS

Full scale flow	Weight	Height	Width	Depth	A	B	C	E	F	G
50 SLPM– 100 SLPM	≈ 2.8 lb	6.013 in	4.000 in	1.600 in	0.500 in	0.800 in	0.175 in	1.425 in	0.750 in	3.250 in
	≈ 1.3 kg	152.73 mm	101.60 mm	40.64 mm	12.70 mm	20.32 mm	4.45 mm	36.20 mm	19.05 mm	82.55 mm
250 SLPM– 1000 SLPM	≈ 3.6 lb	6.613 in	4.000 in	1.600 in	0.800 in	0.800 in	0.175 in	1.425 in	0.750 in	3.250 in
	≈ 1.6 kg	167.97 mm	101.60 mm	40.64 mm	20.32 mm	20.32 mm	4.45 mm	36.20 mm	19.05 mm	82.55 mm
2000 SLPM	≈ 4.9 lb	6.933 in	5.200 in	2.900 in	1.120 in	1.450 in	0.200 in	2.700 in	1.350 in	3.850 in
	≈ 2.2 kg	176.10 mm	132.08 mm	73.66 mm	28.45 mm	36.83 mm	5.08 mm	68.58 mm	34.29 mm	97.79 mm
3000 SLPM	≈ 4.9 lb	6.933 in	5.200 in	2.900 in	0.960 in	1.450 in	0.200 in	2.700 in	1.350 in	3.850 in
	≈ 2.2 kg	176.10 mm	132.08 mm	73.66 mm	24.38 mm	36.83 mm	5.08 mm	68.58 mm	34.29 mm	97.79 mm
5000 SLPM	≈ 14.4 lb	7.913 in	5.200 in	3.840 in	1.450 in	1.920 in	0.295 in	3.545 in	1.350 in	3.850 in
	≈ 6.5 kg	200.99 mm	132.08 mm	97.54 mm	36.83 mm	48.77 mm	7.49 mm	90.04 mm	34.29 mm	97.79 mm